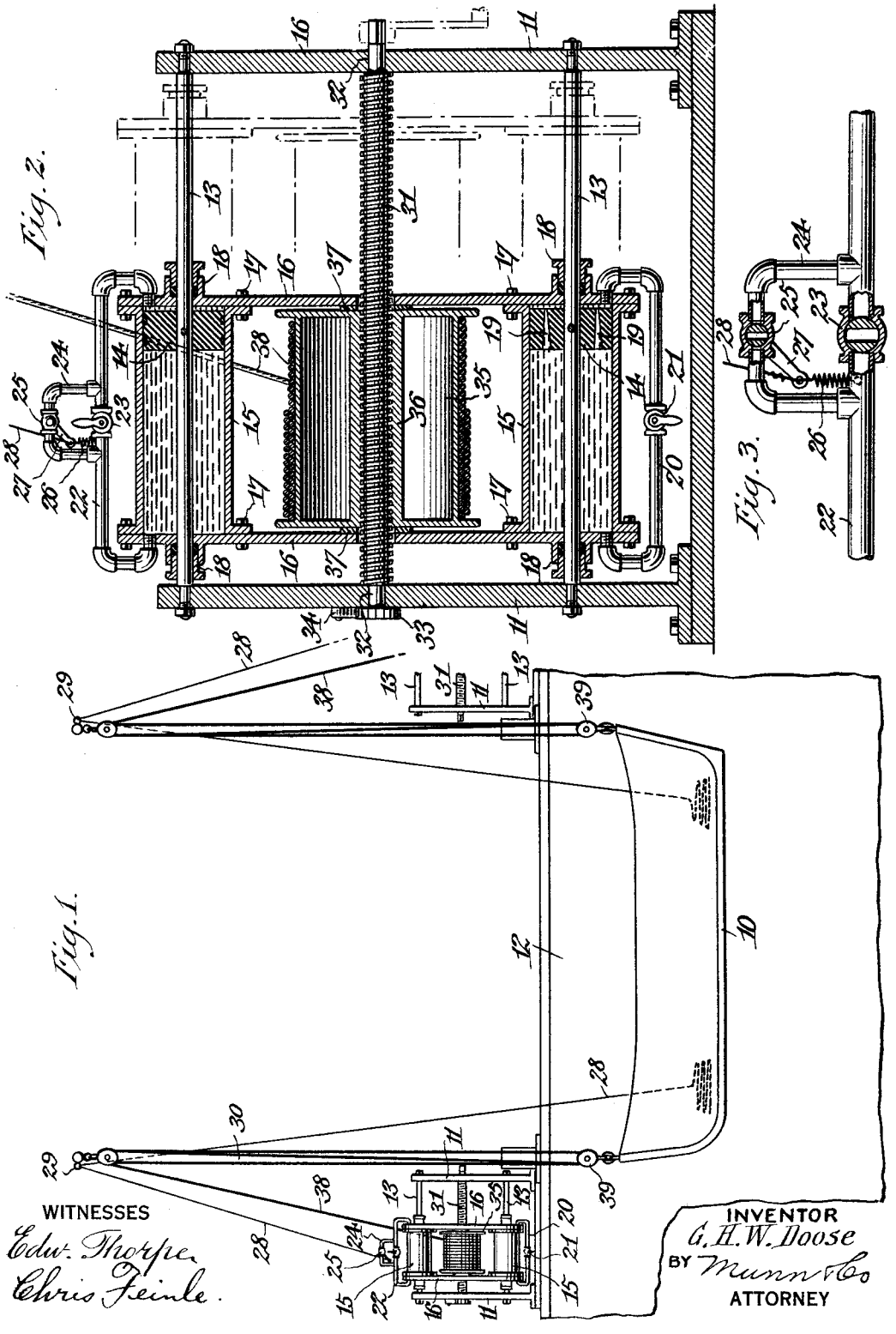
Nov. 22, 1932. G. H. W. DOOSE 1,888,912

LOWERING APPARATUS

Filed May 13, 1931



WITNESSES

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UNITED STATES PATENT OFFICE

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LOWERING APPARATUS

Application filed May 13, 1931. Serial No. 537,124.

This invention relates to a lowering apparatus which may be used advantageously for lowering life boats, but which may be used for any other purposes for which it is designed.

This invention has for its general object the provision of an apparatus of the indicated character which is simple in construction, easy to operate, positive and reliable in operation, and of efficient and substantial design.

As applied to the lowering of life boats, the apparatus does not require a last man aboard ship, because one man in the life boat can safely lower it to the water at an even keel, stopping at will in mid-air when not advisable to further lower the boat and so being in a position at all times to avert mishaps and to observe the danger of lowering at any particular time, or until such time when danger has passed.

The invention further resides in the particular combination, operation and functions of the parts hereinafter fully described and illustrated in the accompanying drawing, in which

Figure 1 is a side view of the apparatus of the present invention employed for lowering a life boat by way of example;

Figure 2 is an enlarged vertical section of the apparatus;

Figure 3 is a view illustrating a portion of the main and the auxiliary by-passes of one of the cylinders and the respective valves for the by-passes which are shown in section.

It is to be understood that an apparatus embodying the features of the invention constituting a single unit may be used or two such units as would be the case as applied to a life boat. In the present instance a life boat 10 is selected to illustrate certain purposes and advantage of the apparatus and although two similar units as stated would be employed only one is shown.

Each unit includes uprights or standards 11 secured to a boat deck 12 in spaced relation to each other, and two rods 13 disposed horizontally and parallel to each other are connected with and supported by the standards 11. A piston 14 is made fast to each of the rods 13 at a point substantially midway between the standards 11. A cylinder 15 is provided for each of the pistons 14. The two cylinders 15 are connected together by end plates 16, which are bolted as at 17 to the end flanges of the cylinders, and serve as heads therefor and also serve to connect the cylinders together for movement in unison. The rods 13 extend through the plates 16 and stuffing boxes 18 carried by the plates 16 for the rods 13 constitute guides and also prevent the escape of liquid from the cylinders 15. The cylinders 15 and plate 16 constitute an assembly slidable on the rod 13. The lower piston has a plurality of passages 19 extending therethrough to retard the flow of liquid from one end of the cylinder to the other end. The liquid may be and preferably consists of heavy oil. A by-pass 20 is connected with the plates 16 in communication with the interior of the lower cylinder 15 at the opposite ends. A stop valve 21 is connected in the by-pass 20. A by-pass 22 is connected with the plates 16, in communication with the interior of the upper cylinder 15 at the opposite ends. A stop valve 23 is connected in the by-pass 22. A by-pass 24 of relatively small capacity is connected with the by-pass 22 around the stop valve 23. A regulating valve 25 is connected in the by-pass 24. This valve 25 is automatically closed in any suitable manner such as by a spring 26 connected with the lever 27 of the valve and the adjacent portion of the by-pass 22. A pull cord 28 is connected with the lever 27 and is passed through an eye 29 on the upper end of the boat davit 30, and said cord passes downwardly into the boat 10. Thus far there has been described hydraulic means for controlling the lowering of the boat 10.

Means which operates in conjunction with the hydraulic means hereinabove described for lowering the boat will now be described. A screw 31 has its opposite ends journaled as at 32 for rotation in the standards 11. A suitable ratchet wheel 33 is fast on one end of the screw, and a pawl 34 cooperates with the wheel 33 to prevent rotation of the screw. The opposite end of the screw 31 is of angular formation in cross section to receive a

handle indicated in dot and dash lines to rotate the screw for a purpose to appear. The screw 31 is held against axial movement. A drum or spool 35 is arranged between the standards 11, and its core 36 is in threading engagement with the screw 31. The plates 16 have holes therein to allow the screw 31 to extend therethrough. Washers 37 are arranged between the plates 16 and the ends of the drum or spool 35 to take up wear and reduce friction. One end of a cable 38 is secured to the drum or spool 35, and this cable constitutes a part of the boat fall supported by the davit 30 and connected as at 39 with one end of the boat 10.

The operation of the apparatus is as follows: By pulling on the cord 28 of each unit, the valve 25 will be opened thereby allowing the liquid in the upper cylinder 15 to flow at a slow speed from the left-hand end of the upper cylinder to the right-hand end by way of the by-passes 22 and 24, it being understood that both stop valves 21 and 23 are closed. At the same time liquid in the lower cylinder 15 will flow through the passages 19 from one end of the cylinder to the other end. This allows the drum or spool 35 to rotate due to the load imposed thereon by the boat 10 with the result that the cable 38 will unwind from the drum or spool thereby allowing the boat 10 to lower. It is to be understood that the screw 31 will be prevented from rotating by the ratchet wheel 33 and pawl 34. By further opening the valve 25 the speed of descent of the boat 10 may be accomplished. Each cord 28 will be under the control of one person standing in the boat 10, who may observe conditions at all times for a favorable or safe lowering to the water. It is to be understood that as the drum or spool 35 rotates it will also be caused to move axially of the screw by reason of the threading engagement of the core 36 with the screw. This axial movement of the drum or spool is imparted to the right-hand plate 16, and as a consequence the rotary movement of the drum or spool 35 is retarded according to the speed of flow of the liquid from one side of each piston 14 to its opposite side. When it is desired to rewind the cable 38 on the drum or spool 35, the pawl 34 is disengaged from the wheel 33 to allow the drum to be rotated in any suitable manner. When both valves 21 and 23 are opened, the screw 31 may then be rotated by the use of the crank thereby returning the assembly consisting of the cylinders 15, plates 16, together with the drum or spool 35 from the position indicated in dot and dash lines to its original position shown in full lines in Fig. 2 of the drawing. In this connection it is to be understood that the liquid may flow freely from the right-hand end of each cylinder to the left-hand end through the by-passes 20 and 22 respectively.

By providing two cylinders 15 and pistons 14 and connecting the cylinders in the manner shown and described, a proper balance is given to each unit of the apparatus. It is to be understood that in certain cases for carrying out certain work, a single piston, cylinder and connected parts may be utilized within the present invention.

Claims:

3. In an apparatus of the class described, the combination of an element having rotary and axial movement, means to yieldably resist the axial movement of said element to thereby resist its rotary movement, and raising and lowering means operated by the rotary movement of said element.

2. In a lowering apparatus of the class described, the combination of a cable drum having rotary and axial movement, and means to yieldably resist the axial movement of said drum to thereby resist its rotary movement.

3. In an apparatus of the class described, the combination of an element having rotary and axial movement, hydraulic means to yieldably resist the axial movement of said element to thereby resist its rotary movement, and raising and lowering means operated by the rotary movement of said element.

4. In an apparatus of the class described, the combination of a fixed screw, an element in threading engagement with said screw whereby said element has rotary and axial movement, means to yieldably resist the axial movement of said element to thereby resist its rotary movement, and raising and lowering means operated by the rotary movement of said element.

5. In a lowering apparatus of the class described, the combination of an element having rotary and axial movement, means to yieldably resist the movement of said element, said means including a member which bears on said element; and lowering means operated by the rotary movement of said element.

6. In a lowering apparatus of the class described, the combination of a cable drum having rotary and axial movement, and means to constantly restrain the movement of said drum, said means including a member which bears on one end of said drum.

7. In a lowering apparatus of the class described, the combination of a fixed screw, a cable drum in threading engagement with said screw whereby said drum has rotary and axial movement, and means to constantly retard the movement of said drum, said means including a member which bears on one end of said drum.

8. In an apparatus of the class described, the combination of a fixed rod, a piston fixed on said rod, a fluid cylinder for said piston having sliding movement on said rod, an element having rotary and axial movement, said

piston having a fluid passage therein, a rigid member on said cylinder which bears on said element to retard the movement of said element by reason of the movement of the cylinder in relation to the piston and the retardation of the flow of fluid through said passage.

9. In an apparatus of the class described, the combination of a fixed rod, a piston fixed on said rod, a fluid cylinder for said piston having sliding movement on said rod, an element having rotary and axial movement, said piston having a fluid passage therein, a rigid member on said cylinder which bears on said element to retard the movement of said element by reason of the movement of the cylinder in relation to the piston and the retardation of the flow of fluid through said passage, and means in communication with the interior of the cylinder at the opposite ends thereof to allow the fluid to flow from one end of the cylinder to the other end and also to stop such flow.

10. In an apparatus of the class described, the combination of a fixed rod, a piston fixed on said rod, a fluid cylinder for said piston having sliding movement on said rod, a cable drum having rotary and axial movement, said piston having a fluid passage therein, a rigid member on said cylinder which bears on said drum to retard the movement of said drum by reason of the movement of the cylinder in relation to the piston and the retardation of the flow of fluid through said passage.

11. In an apparatus of the class described, the combination of fixed spaced parallel rods, an assembly slidable in opposite directions on said rods, said assembly including side members and cylinders rigidly connected with said side members, said cylinders respectively surrounding said rods, a cable drum having rotary and axial movement and disposed between said side members, one of said members acting on the drum to retard the axial movement of said drum to thereby retard its rotary movement when movement of said assembly in one direction is retarded, and means within each of said cylinders consisting of a piston having a passage therein fixed on the corresponding rod, and a quantity of liquid, to retard the movement of said assembly.

GABRIEL H. W. DOOSE.

CERTIFICATE OF CORRECTION.

Patent No. 1,888,912. November 22, 1932.

GABRIEL H. W. DOOSE.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, line 75, for the claim number "3" read "1"; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 13th day of December A. D. 1932.

M. J. Moore,
Acting Commissioner of Patents.

(Seal)